Title: Do Anxiety Sensitivity and Tension Reduction Expectancies Affect the Response to an Anxiety Challenge?

Presentation By:

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The transition from civilian life to military life:

- A highly stressful experience for most military recruits
  - (e.g., first experience living away from home; high-demand environment)
- Nonetheless, there is significant variability among recruits in how successfully they manage this stressor.

The transition from civilian life to military life:

- The focus of our research:
  - Can we predict who will react more problematically to stressors?
  - Are there practical interventions that might promote successful management of major stressors?

The transition from civilian life to military life:

- Predictors of stress reactivity:
  - Social support
    - (e.g., high quality relationships among peers)
  - Adaptive coping strategies
    - (e.g., problem focused [active problem solving] vs. emotion focused [efforts to reduce negative emotions])
  - Core Personality characteristics

The transition from civilian life to military life:

- Personality factors and stress reactivity:
  - Negative emotionality or neuroticism
    - General vulnerability factor for mood and anxiety difficulties
    - Nested under this broad personality dimension are several specific traits:
      - Depression
      - Trait anxiety (tendency to be anxious and fearful in many situations)
      - Anxiety sensitivity (fear of anxiety)

Anxiety Sensitivity

- Anxiety Sensitivity:
  - Fear of anxiety-related sensations
- AS as a risk factor:
  - anxiety disorders
    (e.g. panic disorder)
  - other psychopathology
    (e.g. substance abuse/dependence)

Anxiety Sensitivity (AS)

- Higher in persons with anxiety disorders
- In longitudinal studies, initial AS score has predicted:
  - The development of anxiety disorders
  - Stress reactivity (e.g., panic attacks and disorder; depression) in large samples of military recruits completing basic training

AS and Substance Use

- Individuals with elevated AS…
  - drink more frequently regardless of gender
  - are more sensitive to the anxiety dampening effects of alcohol
  - experience greater anxiety dampening effects as the dose of alcohol increases
  - learn to drink more heavily as they repeatedly experience greater symptom relief from increased alcohol consumption

The goal of the Present Study:

- Does AS lead to more reactivity to certain stressors?
- Does AS increase stress-related substance use?

Expectancies

- Drug Expectancies: The consequences one expects to receive from using a particular drug.

- An important construct in understanding why individuals might use substances to manage stress

Expectancies

- Tension-reduction expectancies (TRE's) predict problematic substance use
  - Experience Stress → TRE for drug → Problematic substance use
  - Experience Stress → No TRE for drug → No problematic substance use.
- AS → Stress Reactivity → TRE's → Negative Situation Substance Use

Craving-Core dependent measure in the study

- Drug Craving: An individual's subjective urge to use specific substances
- TREs predicted alcohol craving following hyperventilation
- AS predicted only heart-rate reactivity to hyperventilation
- No research has been conducted to examine whether AS and TRE's interact to predict drug craving following physical arousal

Hypotheses

- Study Goal: Identify mechanisms explaining the associations between problematic substance use and stress reactivity.
- Hypotheses:
  1. Individuals with elevated AS would
     - be more reactive to physical exercise
     - experience increased state anxiety.
  2. Individuals with high AS who held extensive TRE's for alcohol and tobacco use would
     - experience an increase in craving for these substances in response to physical exercise.
  3. There would be no differences in anxiety or craving in response to the control condition.

Participants

- Participants were 172 naval personnel in the Naval Hospital Corps School (NCHS) training program at Great Lakes
- M age=20.55, SD=2.98

Measures

1. Beck Depression Inventory-Second Edition (BDI-II): Depression
2. Anxiety Sensitivity Index (ASI): Anxiety Sensitivity
3. The State-Trait Anxiety Inventory (STAI): Current anxiety levels
4. Alcohol Outcome Expectancies Questionnaire (AOEQ): Alcohol Expectancies
5. Tobacco Outcome Expectancies Questionnaire (TOEQ): Tobacco Expectancies
6. Desires for Alcohol Questionnaire (DAQ): Alcohol cravings
7. Questionnaire on Smoking Urges (QSU): Smoking cravings
8. Demographic Information Form (DIF): Demographics

Procedures: Group Assignment

- Randomly distributed assessment packets
- Group assignment:
  - Odd numbered packets: Control Group
  - Even numbered packets: Experimental Group

Classroom Phase: Initial Data Collection

- Classroom Phase: Initial Data Collection
  - Experimental and Control Participants
    1. Initial Questionnaires:
       - AS (ASI), depression (BDI), alcohol (AOEQ) and tobacco (TOEQ) expectancies, and demographics (DIF).

Procedures: Control Group

- Control Procedures:
  - Complete Control Group Packet
    1. Pre-control task questionnaires:
       - state anxiety (STAI), and alcohol (DAQ) and smoking cravings (QSU)
    2. Control task:
       - Short reading and survey
    3. Post-control task questionnaires
       - state anxiety (STAI), and alcohol (DAQ) and smoking cravings (QSU)

Procedures: Experimental Group

- Experimental Procedures:
  1. Pre-PRT questionnaires:
     - state anxiety (STAI), and alcohol (DAQ) and smoking (QSU) cravings.
  2. Engage in PRT
  3. Post-PRT questionnaires
     - state anxiety (STAI), and alcohol (DAQ) and smoking (QSU) cravings.

Statistical Analyses: Manipulation Check

Table 2.	Time 1: Average State Anxiety Score	Time 2: Average State Anxiety Score	Mean Diff.	Significance Level
1. Exp. Group	36.0	33.9	2.1	0.07 Not Significant
2. Con. Group	32.9	32.4	0.5	0.30 Not Significan

No effect on general anxiety was found in either condition

- Experimental Group:
  - Individuals with elevated AS were not reactive to physical exercise
    e.g. did not experience increased state anxiety

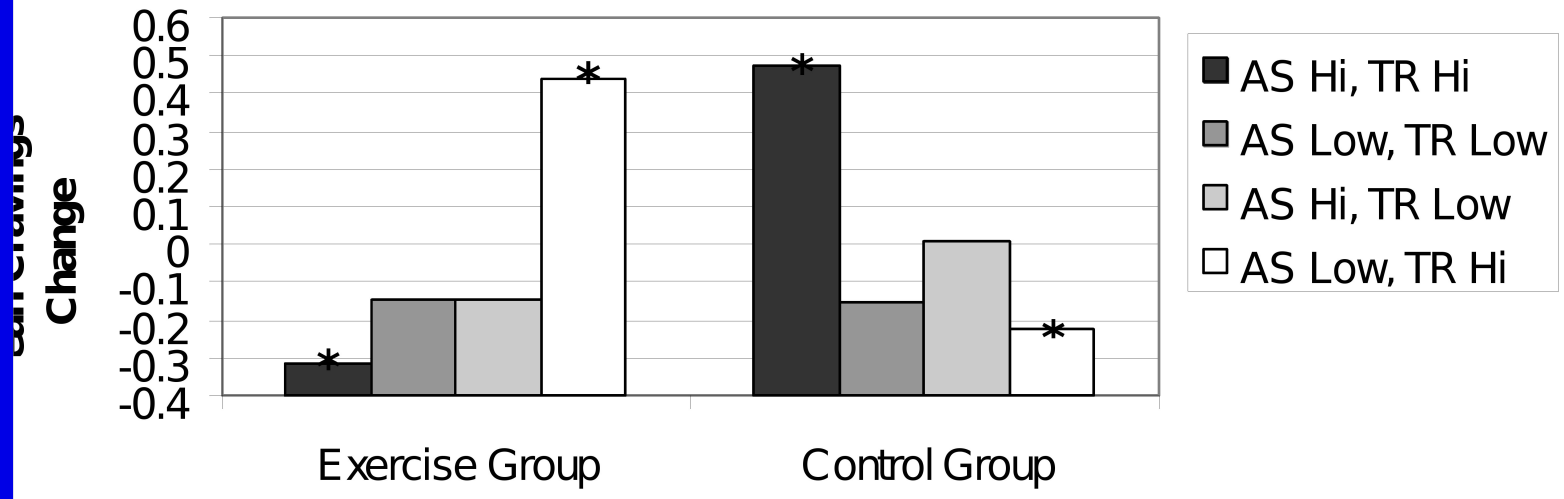
- Control Group:
  - Individuals with elevated AS were not reactive to the control task
    e.g. did not experience increased state anxiety

Significant differences were found pre to posttest on substance cravings, but only for alcohol.

- For tobacco users:
  - Individuals with high AS and high TRE's did not experience an increase in tobacco cravings in response to physical exercise
  - Significance level $p > .05$
- For alcohol users:
  - A significant interaction was detected for those who used alcohol
  - Significance level $p = .05$
  - This interaction was examined more closely

Probe of Three-way Interaction for Alcohol

Figure 1. Mean Alcohol Cravings Change for Exercise and Control Groups at Different Combinations of AS and TRE Levels



* **Significant at p < .01**

Stress reactivity among participants

- Although our study was focused on the AS construct and stress reactivity, our assessment protocol identified several other indicators of stress reactivity in the sample.

Rates of Depression Among NHCS Recruits

- Usable Data (N=172)
  - Depression Level (BDI Score)N/Percent
    - Minimal Depression (Score 0-13): 142/83%
    - Mild Depression (Score 14-19): 11/6%
    - Moderate Depression (Score 20-28): 10/6%
    - Severe Depression (Score 29-63): 1/1%
    - Did not fill out the BDI: 8/4%
- Entire Sample (N=331)
  - Depression Level (BDI Score)N/Percent
    - Minimal Depression (Score 0-13): 265/80%
    - Mild Depression (Score 14-19): 19/6%
    - Moderate Depression (Score 20-28): 17/5%
    - Severe Depression (Score 29-63): 6/2%
    - Did not fill out the BDI: 24/7%
- Percent Referred to Mental Health: 42/13%

Rates of Average and High Anxiety Sensitivity Among NHCS Recruits

- Overall Sample (N=331)
  - Anxiety Sensitivity (ASI) N/Percent
    - Average AS (19.1): 235/71%
    - +1 Standard Deviation (28.21): 16/5%
    - +2 Standard Deviations (37.32): 7/2%
    - Did not fill out ASI: 73/22%

Rates of Alcohol and Tobacco Use Among NHCS Recruits

- Number and percent of NHCS recruits who:
  - were current alcohol users: 141 / 43%
  - were current tobacco users: 117 / 35%
- Current alcohol and tobacco use: Defined as having used either substance within the past three months from the time of participation.

Discussion

1. The core hypothesis that individuals with high AS who held extensive TRE's for alcohol or tobacco would experience an increase in cravings for these substances in response to physical exercise was not supported.

2. Experimental participants with high AS and high TRE's experienced a decrease in alcohol cravings following the PRT, while control participants experienced an increase in cravings following the control task.

3. It may be that experimental participants with high AS and high TRE's for alcohol experienced habituation of their anxiety due to prolonged exposure to the PRT, which resulted in decreased alcohol cravings.

Discussion

5. A substantial number of NHCS recruits reported high levels of negative affect (e.g. depression and anxiety sensitivity) and/or were referred to Navy Mental Health for further assessment after being screened for depression and suicidal ideation.
6. A substantial number of NHCS recruits reported using alcohol or tobacco, and also reported high cravings and tension reduction expectancies for these substances.
7. These findings emphasize the the need for proper screening and educational interventions for NHCS personnel and the possible utility of stress management interventions.